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ANNUAL FOREST INSECT STATUS REPORT IDAHO AND MONTANA 1945

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INTRODUCTION

Successful forestry practices depend upon a knowledge and understanding of all factors associated with each environment. Of these factors, problems arising from forest insect activity can no longer be neglected. Past and potential insect damage plays an important role in determining when and how each timber stand is to be harvested. Unless this consideration is given, management will fail to obtain maximum silviculture and economic returns from forest land. To assist in reaching this desired objective, the Coeur d'Alene Laboratory extends an entomological service to all land managing agencies. Limited personnel has not permitted the meeting of this obligation in full, although an effort has been made to keep abreast of the most important situations. An annual report of forest insect conditions within the Northern Rocky Mountain area is submitted as a part of this service. All available sources of information are used in its computation, with Rangers Reports proving of valuable assistance. The possibility of the picture as drawn by this report being incomplete or of important situations having been ommitted is fully appreciated. However, all known situations are included and all available data has been used in their description.

FOREST INSECT SITUATION

Mountain Pine Beetle in Western White Pine

Last seasons annual report expressed the fear of a marked increase in the severity of mountain pine beetle (Dendroctonus monticolae) activity throughout the white pine stands of the region. Although serious situations are present on the Kootenai and Coeur d'Alene National Forests it would seem that this prediction was in error. However, it is trusted that more detailed information will not show this retraction to have been a mistake.

In all mature white pine stands there is an annual loss of merchantable timber as a result of mountain pine beetle activity. This loss varies from a so called normal or endemic situation to that of an epidemic

which often destroys a large percent of the stand in a very few years. Although losses from endemic situations are not of great importance for any one season, over a period of years they build to a startling percent of original white pine volumes. This fact is fully realized by all agencies who have attempted to hold mature white pine stands for indefinite periods. White pine foresters recognize that this tree species is a perishable commodity, which cannot be set aside and held until wanted.

On the Coeur d'Alene National Forest serious losses of commercial white pine still occur in the Yellow Dog, Downey Creek, and adjacent drainages. During the 1945 season this loss was estimated to be not less than 1/2 of 1 percent of the residual volume. On a relatively small area of 1,120 acres within the Yellow Dog drainage, the 1945 loss amounted to 1,800 trees, or 1.61 trees per acre. Control measures were recommended for the reduction of this "hot spot" of infestation, but it is not known if funds will be available.

On the Clearwater National Forest and lands protected by the Clearwater Timber Protective Association, there has been an annual loss of merchantable timber which, during the past decade, has built to a startling volume. Within the Skull, Quartz, Osier-Deception and Orogrande Creek drainages the 1945 infestation varies from a small fraction of a tree to as much as .9 of an infested tree per acre. Throughout this area one could quite safely place the annual loss at approximately 1/3 of a tree per acre for all mature stands. As more than fifty thousand acres are involved, the yearly loss would be 8,000,000 B.F. or more.

Control measures were instituted in May against mountain pine beetle epidemics in the Pete and Spread Creek drainages of the Kootenai National Forest. Some fifteen years ago an outbreak of this insect destroyed a large percent of the white pine of these two drainages before it was checked by artificial control. In the Pete Creek drainage this loss was not less than 60 percent of the original white pine volume, with a some what lower figure for the Spread Creek area. In 1945, the infestation which had rebuilt to its former seriousness threatened to destroy the residual timber stand. Although a material reduction in the severity of the infestation followed the institution of control, maintenance control will be necessary during the coming season. It is hoped a thorough cleanup of the present infestation will eliminate the danger of further loss from the present outbreak. However, one can be assured that in this beetle susceptible timber stand the beetle population will at some future time again rebuild to epidemic proportions.

On the Kaniksu and Cabinet National Forests no alarming infestations of the mountain pine beetle in white pine were recorded. Within the 12 Mile Creek drainage of the Cabinet, where May control measures were directed against the early stages of a potentially serious situation, only a few 1945 infested trees were recorded.

On the South Fork of the Flathead River, Flathead National Forest, an infestation of this insect in white pine was reported again. This

situation has been reported for a number of years, but no action has been taken because of the position taken concerning the values at stake. This situation will be examined during the coming season.

On the St. Joe National Forest a mountain pine beetle infestation within the Johns Creek drainage was included in the Annual Rangers Reports. As this area is to be logged in the immediate future, no action seems necessary. In the Fleming, Siwash, Sisters, Boulder, Stub Toe, and Montana Creek drainages there is an infestation which varies from a small fraction to as much as .8 of an infested tree per acre. The severe infestation was recorded within the Siwash Creek drainage. As only a small amount of data was obtained from these areas, it indicates the existence of potentially dangerous infestations only.

Mountain Pine Beetle in Ponderosa Pine

An infestation in ponderosa pine on the head of the Blackfoot River, Montana, was reported in October 1944 and examined in June 1945. This examination revealed a severe epidemic of the mountain pine beetle distributed throughout the Lincoln Basin and Avon Valley areas. Started in 1942 or 1943, this outbreak increased in severity until a serious situation now exists. A detailed survey in August showed at least a 200 percent increase from the 1944 to the 1945 infestations. It is difficult to predict the future of this situation, but there is no evidence which can be used to predict any change in the severity of the outbreak during the coming season. Within the Lincoln Basin some 8,000 trees, or approximately 5,000,000 board feet of commercial ponderosa pine, were killed by this beetle during the 1945 season. In the Avon Valley, which is but a few miles to the southwest of Lincoln, the situation is equally as serious, although the volume of timber at stake is smaller. Some 20 years ago an epidemic of this insect swept through the lodgepole and ponderosa pine stands of these areas. Although no accurate figures are available as to the actual loss of timber which occurred at that time, it is obvious that it was not less than 40 percent of the merchantable ponderosa pine which existed at that time.

Another infestation of the mountain pine beetle in ponderosa pine was reported from the Lewis and Clark National Forest where infested trees occur in groups of 1 to as many as 6 or more. Although reporting officers do not consider this situation as serious, its potentials warrant an examination during the coming season. Light and scattered infestations were also reported from the Seeley Lake, Trail, and Fish Creek areas of the Lolo National Forest.

Mountain Pine Beetle in Lodgepole Pine

In July 1944, a serious infestation of the mountain pine beetle was recorded within the lodgepole pine stands of the Caribou National Forest. A survey of this area in September of that year showed at least 20,000

infested trees. Control measures were instituted during the winter of 1944 and 1945, and approximately 10,000 trees treated. Although the treatment of these trees reduced this years infestation proportionately, sufficient infested trees were left untreated to result in at least a 100% increase in the severity of this years attack. A survey of this forest was conducted during September which showed approximately 40,000 infested trees and a much larger acreage involved.

A serious epidemic outbreak of the mountain pine beetle in lodgepole pine was reported from the Falls Creek drainage of the Teton National Forest. A survey of this relatively small area of approximately 1,000 acres, showed this years attack to average 114 trees per acre with a total infestation of some 17,000 trees. Some 20 miles to the north of this infestation within the Grand Teton National Park, there are indications of a rapidly increasing outbreak of this insect within the lodgepole pine stands of that area. Similar conditions exist on portions of the Targhee National Forest which borders the Caribou on the north, and the Teton on the west.

The seriousness and scope of the mountain pine beetle infestation within this group of forests can only be considered as extremely serious. If artificial control is to be successful all areas must be considered. As money is not available for a control project of this magnitude, predictions, based upon past records, would indicate that the insects will spread into all lodgepole pine stands of this immediate area. With such epidemic situations one can expect a high mortality of trees above 8 to 10" in diameter, with the importance of this loss reaching beyond the actual destruction of timber. Serious fire hazards are created and falling snags become a serious problem in connection with road, trail, and telephone line maintenance for years to come.

Mountain Pine Beetle in White Bark Pine and Limber Pine

Although no infestations of the mountain pine beetle were reported from white bark pine or limber pine areas during the past season, it is known that light losses still occur along the higher elevations of the Continental Divide. These losses are not serious and require no attention at this time.

Western Pine Beetle in Ponderosa Pine

The most important infestation of the western pine beetle (Dendroctonus brevicomis) is within the selectively cut ponderosa pine stands of the J. Neils Lumber Company at Libby, Montana. Fortunately these trees are salvaged by the lumber company before the beetles emerge and this action has had a direct effect upon the potential seriousness of this situation.

Less important situations were reported from the west fork of the Bitterroot where a rather consistent infestation has occurred for several

years. Although it can be considered as an endemic condition, a rather large volume of timber is destroyed each year. An infestation of this insect was reported from the Clearwater district of the Nezperce National Forest which is considered as increasing in severity.

Douglas Fir Beetle in Douglas Fir

It is necessary to report once more that the Douglas fir beetle, (Dendroctonus pseudotsugae), continues to take a heavy toll of Douglas fir throughout the region, with infestations of varying severity to be found in all areas of mature timber. Serious losses have occurred on the west fork of the Bitterroot River where, during the past few years, 50% of the timber on Thunder Mountain is considered to have been killed. This infestation is reported as increasing in severity and spreading into the Hughes Creek Drainage adjacent. Within the Coram district of the Flathead National Forest, the Fortine district of the Kootenai National Forest, the Gallatin River drainage of the Gallatin National Forest, and the Clearwater district of the Nezperce National Forest, losses are occurring in single trees and small groups. In these areas the situation is not considered as alarming and no action is recommended. Within the Salmon River district of the Nezperce National Forest, infestations are considered as increasing and of sufficient seriousness to warrant some consideration. On the Sawtooth National Forest there is a serious infestation of this insect at Red Fish Lake. During the past 3 or 4 years serious losses have occurred at New Meadows, Idaho, and it is believed that this outbreak originated from adjacent logging slash. A survey of this situation during October showed a marked decrease in the severity of the situation with an extremely light 1945 loss.

Oregon Engraver Beetle in Ponderosa Pine

Outbreaks of the Oregon engraver beetle, (Ips oregoni) in different degrees of severity in ponderosa pine stands where abnormal accumulations of slash occur. Such slash may result from small wood cutting operations as well as logging operations. Large populations of these insects develop rapidly in this attractive host material, which for a short time, destroy patches of reproduction, poles, and tops of mature trees. Fortunately outbreaks of this insect are of short duration and in most instances by the time the situation is observed the danger of further damage has passed. Perhaps the most serious consequences associated with destructive engraver beetle populations are subsequent outbreaks of the western pine beetle which develop in the base of top killed trees. During the past season, as in 1944, serious outbreaks of this insect which were directly associated with logging slash existed on the Kootenai and Payette National Forests. Logging slash created in late fall and early winter is not as attractive as a host to engraver beetle attack as that created during summer months, however, logging operations cannot be confined to this period of the year.

Spruce Budworm Infestations

Outbreaks of the spruce budworm (Cacoecia fumiferana) are present on a number of forests within the region with a tremendous acreage of timber being defoliated annually. Although on areas where these infestations have been present for a number of years there has been considerable killing of terminals, no serious tree mortality has occurred. It is believed that in this region most of the mortality of Douglas fir associated with spruce budworm epidemics follows the attack of the weakened trees by the Douglas fir beetle. Fortunately most of the timber stands now being defoliated by the spruce budworm are immature and of an unfavorable size for attacks of the Douglas fir beetle. Serious infestations of the spruce budworm are present within the White Sulphur Springs district of the Lewis and Clark Forest. It is reported that in one portion of this district many trees have been killed. Within the Pig Prairie and Spotted Bear districts of the Flathead National Forest, the spruce budworm defoliation now covers some 35,000 acres. Reporting forest officers consider this outbreak as increasing. Serious infestations were recorded from the White Hall and Boulder Ranger districts of the Deerlodge National Forest, the Bridger Mountain district of the Gallatin National Forest and the Canyon Ferry, Townsend, and Helena districts of the Helena National Forest. Within this group of forests the infestation is wide spread and will undoubtedly result in serious damage before the outbreak is reduced by natural means. An infestation within the Clearwater district of the Nezperce National Forest is considered as having practically died out.

Spruce Budworm, Saw Fly Infestation in Hemlock

A combined spruce budworm and saw fly, (Neodiprion abietis), outbreak within the hemlock stands of the Flat Creek Drainage, Coeur d' Alene National Forest was recorded in 1944. This infestation is still active and the terminals on a large percent of the defoliated trees have been destroyed during the past two seasons. It is difficult to predict the actual tree mortality that will be associated with this epidemic, as it is dependent upon the duration of the infestation. If it continues in its present severity for another season or more it is believed that a large percent of the hemlock stand will be destroyed.

Saw Fly Infestation in Hemlock

In a rather restricted area of the Shoshone Creek drainage, Coeur d'Alene National Forest, there was a rather severe defoliation of hemlock and associated tree species by a saw fly during the past season. Although this insect has not been positively determined, it is believed to be the same species as recorded from the Flat Creek area (Neodiprion abietis). This is the first year that this infestation was recorded and there has been but little if any destruction of tree terminals as a result of this years attack.

Larch Saw Fly in Larch

A number of years ago an infestation of the larch saw fly (Nematus erichsonii), was reported from Flathead National Forest. This was the first record of this insect in the western United States, which, during subsequent years, spread in epidemic form throughout the larch forests of the region. During the past two years there has been a material decrease in the severity of this outbreak with only two areas being reported during the past season. One of these is within the Trout Creek drainage of the Cabinet National Forest and the other within the area covered by the Clearwater Timber Protective Association. These infestations were quite light and it is believed that this outbreak will soon pass from existence. During the 11 years which this outbreak has been in existence, there has been no timber losses associated with it.

Douglas Fir Tussock Moth in Douglas Fir

Throughout northern Idaho there were a number of spot infestations of this insect observed during the past season. In 1944 only one severely infested isolated tree near Rathdrum, Idaho, was recorded. During the past season a number of infestations of 4, 5, or 6 trees were recorded within the Spokane valley and in areas around Worley and further south through Moscow, Idaho. These spot infestations were located in farm yards or around residences in small communities. The St. Joe National Forest reports a severe infestation of this insect within the Palouse Ranger District. Within this area it is reported that a large area of Douglas fir was severely defoliated during the past season and that thousands of these trees will die. Apparently this area has acted as a center of infestation for a rather general spread of the insect during the past season or more. As the female moths are wingless there can be no spread of the insect by flight. It is believed that the spread or dissemination of these insects comes from air currents. Upon hatching the tiny larvae hangs suspended on a silken thread, which would have sufficient buoyancy to permit them to be carried in this manner for long distances. Defoliations by the Douglas fir tussock moth are so severe that trees seldom survive severe defoliation. Due to the inability of the female moths to fly, tremendous larvae populations are built in a period of 2 or 3 years. This concentration of larvae results in the destruction of every bit of foliage and all trees within the infested area die. As with all defoliating insects, the severity of the loss associated with this outbreak will depend upon its duration.

Undetermined Forest Defoliator

Within the Benton Creek drainage of the Potlatch Lumber Company, a severe defoliation of all tree species was recorded during the past season. At the time this defoliation was brought to the attention of this office, the insect responsible was not to be found upon the trees. However, an examination revealed the presence of countless numbers of

Lepidopterous pupae in the soil at the base of the defoliated trees. An attempt has been made to rear these insects during the winter season but as yet no emergence has occurred. It is possible that it will be necessary to wait until normal field emergence occurs in the spring of 1946 before an identification of this insect can be obtained.

Miscellaneous Insects

The dying of a large number of small ponderosa pine trees has been reported from the Hubbard Dam area on the head of the Little Bitterroot River. Although it is not known what the causal agency is, it is believed that it is either an Ips oregoni infestation which has resulted from adjacent logging slash or else a foliage condition resulting from winter kill or some other agency. This area will be examined during the coming season.

An injury to the foliage of Douglas fir trees within the Plains Ranger district on the Cabinet National Forest was reported in the fall of 1944. This injury turned the foliage yellow and made the trees unfit for Christmas tree purposes. This area was examined during the past season and although all foliage except the 1945 growth had fallen a heavy infestation of the spruce gall aphid, (Adelges cooleyi) is believed to be the causal agency. Throughout many portions of the states of Idaho and Montana there was a severe infestation of the California tortoise shell butterfly (Aglais californica). This infestation was first reported by forest users when the adult moths began to appear in countless numbers along road sides, within villages, and all open forest areas. The caterpillars of this butterfly feed upon the foliage of ceanothus and many areas were recorded where this shrub had been stripped of all leaves. It is not believed that this outbreak will result in any permanent injury.

Surveys and Examinations

During the 1945 season forest insect surveys and examinations were made on the following forest areas. Cabinet, Deerlodge, Gallatin, Helena, Coeur d'Alene, Caribou, Payette, Targhee, Teton, Kaniksu, St. Joe, Nezperce, Clearwater, and Kootenai National Forests; the Grand Teton, Glacier, and Yellowstone National Parks; private timber lands of the Anaconda Copper Mining Company, Clearwater Timber Protective Association, and the City of Orofino. These surveys and examinations varied in intensity from a few hours visitation to check the seriousness of a reported abnormal forest condition to intensive surveys involving a two or three percent coverage of timbered areas concerned. During the past few years the survey program of the Coeur d'Alene Laboratory has not been of sufficient magnitude to provide a satisfactory picture of the insect situation within the region. This condition is recognized by all parties concerned and sincere efforts are being made to bring this program to a level commensurate with the importance of the insect problem.

Direct Forest Insect Control

During the 1945 season artificial control measures were conducted on the Coeur d'Alene, Kootenai, Cabinet, and Caribou National Forests. On the Coeur d'Alene National Forest, Mexican Internationals were used to treat 587 white pine trees on an area of intensive infestation. German Internees were employed on the Kootenai for the purpose of treating 983 infested white pine trees in an area of severe infestation. On the Cabinet National Forest a crew of young boys were used to treat 95 infested white pine trees for the purpose of reducing a potentially serious outbreak within the 12 Mile Creek drainage. On the Caribou National Forest, American labor was employed during the winter of 1945 and 1946 at which time approximately 10,000 infested lodgepole pine trees were treated. Unfortunately this was perhaps not more than half of the infestation so that the results obtained were not satisfactory.

Silvicultural Control

During the past season considerable attention has been given to the development of plans looking to the prevention of bark beetle epidemics rather than their control. These plans point to a rapid cut over of all white pine stands, removing trees considered as susceptible to bark beetle attack, and leaving a residual stocking of trees which will develop into a thrifty timber stand resistant to bark beetle attack. Present plans for harvesting white pine on National Forest lands include measures having as their objective the development of thrifty residual stands to be held for second cuttings at future periods.